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Successful Management of Rare Advanced Abdominal Pregnancy with Severe Preeclampsia: A Case Report and Literature Review

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Abstract

Background: Abdominal pregnancy is a rare ectopic pregnancy in which the baby grows up in the peritoneal cavity exclusive of tubal, ovarian, or intraligamentary implantations. Abdominal pregnancy has very high maternal and fetal morbidity and mortality. Therefore, early recognition and prompt management remain challenges for the treating physician. A thorough examination of the newborn is critical to rule out congenital anomalies. We reported a 24-year-old woman primigravida 40 weeks post-date with spontaneous conception who was admitted to the hospital with complaints of diffuse abdominal pain, symptoms, and signs of severe preeclampsia (headache, vomiting, high blood pressure, blurred vision, and swelling of the feet, ankles, face, and hands). Moreover, she had recurrent vaginal spotting, nausea, loss of appetite, and occasional vomiting. She was diagnosed with a progressive abdominal pregnancy later. A live male fetus stained with meconium was removed from the abdominal cavity, and the placenta was completely removed without significant blood loss. **Conclusion:** Abdominal pregnancy is a rare ectopic pregnancy requiring high clinical suspicion, early identification, and prompt management to avoid maternal morbidity and mortality. Abdominal pregnancy can be prevented by avoiding miscarriage and treating adhesions and chronic inflammatory diseases.

Keywords

Ectopic Pregnancy, Abdominal Pregnancy, Preeclampsia, Saudi Arabia

1. Introduction

Abdominal pregnancy is a potentially life-threatening form of ectopic pregnancy

that seldom reaches late gestation, and the occurrence of a live fetus is indeed uncommon. In addition, the majority of pregnancies are terminated early due to poor fetal prognosis and an increased risk of maternal mortality due to hemorrhagic shock after spontaneous placental detachment. A strong index of suspicion is necessary for the accurate diagnosis of abdominal pregnancy and its prompt care [1]. The historical definition of abdominal pregnancy is implantation in the peritoneal cavity, exclusive of tubal, ovarian, or intraligamentary implantations [2]. It is generally accepted that these pregnancies are fatal due to the risk of massive hemorrhage from a partially or totally separated placenta at any stage of pregnancy; moreover, the mortality is around 7.7 times that of other locations of ectopic pregnancy [3]. Abdominal pregnancy has very high maternal and fetal morbidity and mortality [4]. In the scientific literature, abdominal pregnancies are often divided into two classes: primary abdominal pregnancies, in which the baby is initially implanted on a surface in the abdominal cavity; and secondary abdominal pregnancies, in which the baby is initially implanted in the ovaries, tubes, or uterus, and then germinates or implants in the abdominal cavity [5]. Herein, we present a case of a 40-week abdominal pregnancy and severe preeclampsia, which was evaluated with Doppler ultrasound and managed successfully by cesarean section (CS). Recently, Chen *et al.* published their paper entitled "Abdominal pregnancy: a case report and review of 17 cases" to investigate the clinical aspects of abdominal pregnancy and the diagnosis and prognosis of various treatment options, and they concluded that the rate of preoperative abdominal pregnancy diagnosis is low. The locations of implantation in the pelvic peritoneum and pelvic organs are more prevalent than the others. The therapeutic effects of laparoscopic surgery during the first trimester of pregnancy are enhanced. The blood flow of the placenta must be thoroughly checked before surgery. When it is anticipated that attempts to remove the placenta will result in deadly bleeding, the placenta may be left in situ, although close long-term monitoring is required [6].

2. Case Report

A 24-year-old unbooked primigravida who was 40 weeks post-date and had a spontaneous conception. She was admitted to the hospital for one day with symptoms and signs of severe preeclampsia (headache, vomiting, high blood pressure (BP), blurred vision, and swelling of the feet, ankles, face, and hands). She also reported having experienced diffuse abdominal pain and recurrent vaginal spotting, accompanied by nausea and loss of appetite for two days.

On physical examination, her vital signs were a blood pressure of 190/110 mmHg, a pulse rate of 94 beats per minute, a temperature of 37˚C, a respiratory rate of 20 minutes, and oxygen saturation (SPO2) of 97% on room air. She was awake and alert, and she appeared to be in pain and anxious but not in distress or cyanotic. The skin and mucous membranes were pale, and her respiratory and cardiovascular examinations were unremarkable. On abdominal examination, the abdomen was enlarged, soft on palpation, moderately tender, and

without protective muscle tension. Moreover, palpation quickly identifies parts of the fetus's body in the transverse position. On auscultation, the positive fetal heartbeat was 150 beats per minute. There was no clear border of the uterus, nor were there any felt signs of uterine contraction. On pelvic examination, the cervix is closed, posterior, and uneffected. There were no signs of free fluid in the abdominal cavity. There was hyperreflexia but no focal neurological deficits.

The patient was admitted to the intensive care unit for stabilization, managing elevated BP with magnesium sulfate and labetalol per the hospital protocol, and planned for an emergency cesarean section (CS). The initial investigations revealed Hb of 7.1 g/dl and normal liver, renal, and coagulation profiles were normal. Furthermore, urinary protein by catheter was +3.

An urgent ultrasound revealed a single intra-abdominal viable pregnancy with a gestational age of 37+, an empty uterus, fluid inside the cul-de-sac, and an expected fetal weight (EFW) of 2.8 kg and a biophysical profile (BPP) of 6/8 with reduced liquor. Moreover, Doppler evaluation showed vascularization of the uterine fundus. No tissues were visualized between the anterior abdominal wall and parts of the fetus. However, Doppler measurements revealed a 12 × 10 cm formation in the right uterine appendage area with intense blood flow. No signs of amniotic fluid were found, but a small amount of peritoneal fluid was described in the left pericolic pocket. Later, she was diagnosed with a progressive abdominal pregnancy.

After stabilization, we obtained the patient's informed consent for CS. The access was made through a mid-umbilical incision; intraoperatively, the uterus was found empty, and the placenta was adherent to the bowel and completely removed about 4 liters of blood. Moreover, after separating the adhesion, a defect in the right cornu was found. The general surgery team joined the operation room to do small bowel adhesiolysis and repair the small serosa tear. A live male fetus stained with meconium was freely removed from the abdominal

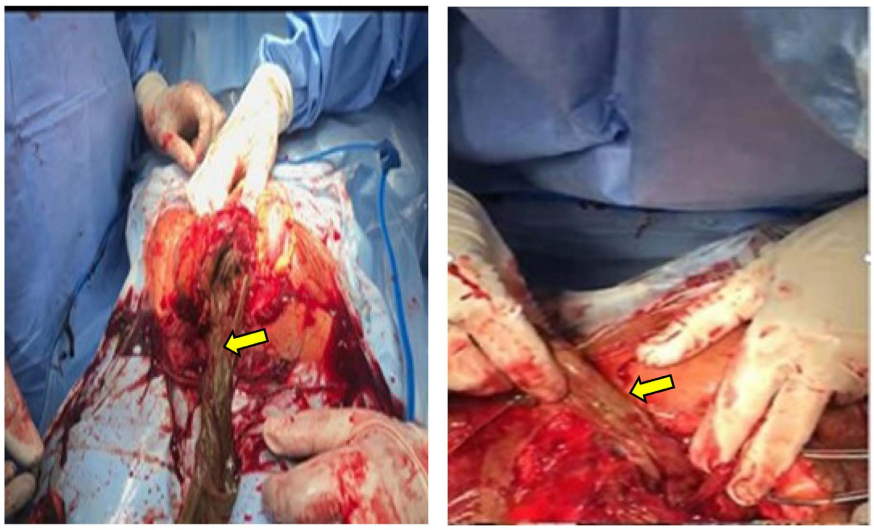

Figure 1. The umbilical cord emerges from the abdominal cavity (black arrows).

cavity during the operation (**Figure 1**). The baby weighed 2.6 kg, and the Apgar score was between 7 and 9 points. During the examination, no major birth defects were found.

Since admission, six units of PRBC, six units of platelets, three units of fresh frozen plasma, and one unit of cryoprecipitate have been administered to the patient. Five days of ceftriaxone and metronidazole were administered to her. The patient was discharged from the hospital with her baby in good general health and was followed up at the outpatient clinic on a regular basis. The blood β-HCG restored to normal levels three weeks following surgery. The patient is experiencing no pain and is currently being closely monitored.

3. Discussion

Ectopic pregnancy develops in 1% - 2% of all pregnancies. More than 90% are tubal pregnancies; the rest are ovarian, abdominal cervical, and pregnancies that developed in a postoperative scar [7]. Abdominal localization occurs in about 1.5% of cases of ectopic pregnancy [2]. Most cases are secondary: a viable embryo enters the abdominal cavity after tubal abortion or ruptures [8]. According to Studdiford's criteria, the diagnosis of primary abdominal pregnancy is based on the following anatomical conditions: normal tubes and ovaries; absence of a uteroplacental fistula; and attachment exclusively to a peritoneal surface early enough in gestation to rule out the possibility of secondary implantation from the primary site [1]. Moreover, Friedrich EG and Rankin CA argued in 1968 that for a pregnancy to be classified as a true primary abdominal pregnancy, the gestational age must be less than 12 weeks and the trophoblastic attachments must be limited to the peritoneal surface [9].

The clinical manifestations of abdominal pregnancy are varied, depending on the location and gestational age. As in the previously described late abdominal pregnancy detection cases, the presented patient's symptoms were nonspecific. They included soreness during fetal movements, abdominal pain, easily palpable parts of the fetal body, and transverse presentation [10].

A classic finding on ultrasound is the absence of echo signs of myometrium between the mother's bladder and the fetus, which took place in the described patient. Additional signs were poor visualization of the placenta, oligohydramnios, and transverse presentation. Without a thorough assessment of the listed signs, an abdominal pregnancy can go unnoticed even after a series of ultrasounds [11] [12]. Computed tomography (CT) and magnetic resonance imaging (MRI) can aid in the identification of anatomical structures, placental attachment, and vascular connections. Detection of late abdominal pregnancy with a living fetus requires immediate surgical intervention, but doctors' attitude to separating the placenta remains controversial. There are rare cases of successful expectant tactics in abdominal pregnancy before the fetus reaches the term of viability [7].

The prognosis for the mother and fetus in an abdominal pregnancy is usually severe. Furthermore, the maternal mortality rate, usually due to uncontrolled bleeding, reaches 20% [13]. Perinatal mortality is 40% - 95%, and congenital

malformations or deformities are observed in 21.4% of fetuses [8]. In the case described, the outcome was favorable for both the mother and the child. The woman did not have significant intraoperative blood loss due to the easily accessible placenta [14]. Despite the absence of an amnion, the newborn did not have any developmental abnormalities or deformities. In this case, the fetus's survival and development for a sufficient period were made possible due to sufficient placental support provided by the vessels of the ovary, fallopian tube, and broad ligament of the uterus [5].

Abdominal pregnancy is the rarest type of ectopic pregnancy. It occurs if the fertilized egg does not enter the uterus but is implanted on the wall of the abdominal organs. It is difficult to recognize since the blood test differs slightly from a normal pregnancy, and the ultrasound data can be misinterpreted [15].

The high probability of repeated ectopic nidation of the ovum after organ-preserving operations for tubal pregnancy dictates the need to improve methods of organ-sparing treatment and postoperative rehabilitation, as well as a delayed study of the state of the fallopian tubes after organ-sparing treatment to identify a group of patients at high risk of recurrent ectopic pregnancy [12] [13] [14] [15] [16].

Late-diagnosed abdominal pregnancy is a life-threatening condition that rarely results in a viable child. Medical alertness, careful assessment of clinical findings, and unambiguous ultrasound support the early detection of this pathology, especially in the absence of modern instrumental imaging techniques. Timely surgical intervention can prevent serious complications in the mother and the fetus. Moreover, the prevention of ectopic pregnancy is based on the prevention of abortion and adequate treatment of chronic specific and non-specific inflammatory diseases of the female genital organs [17].

4. Conclusion

Life-threatening abdominal pregnancy necessitates a high level of clinical suspicion. The life-threatening consequence is bleeding from the placental location that has become detached. Consequently, early detection and rapid treatment continue to be obstacles for the treating physician. A comprehensive neonatal check is essential to rule out congenital defects.

Authors' Contribution

Faisal Ahmad Musalli and Gehan Mohammed Atef collected the data, analysed the data, and created all figures. Gehan Mohammed Atef and Attas Alawi Alattas were responsible for writing the manuscript. Faisal Ahmad Musalli and Gehan Mohammed Atef took clinical care, evaluated the patient, and reviewed the manuscript. All authors have read and approved the manuscript.

Conflicts of Interest

The authors declare that they have no competing interests.

Ethics Approval and Consent to Participate

Case reports are exempted from institutional board review and ethical approval.

Availability of Data and Materials

Data is limited to one patient in this case report. Data is available whenever requested.

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Abbreviations

CS: Cesarean section, LMP: Last menstrual period, EDD: Expected delivery date, BP: Blood pressure, SPO2: Oxygen saturation, EFW: Expected fetal weight, BPP: Biophysical profile, APGAR: Appearance, Pulse, Grimace, Activity, and Respiration, CT: Computed tomography, MRI: Magnetic resonance imaging, COC: Combined oral contraceptives